

On-line Supplemental Material:

Fine Particulate Matter Constituents Associated with Cardiovascular Hospitalizations and Mortality in New York City

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Table 1. Correlation matrix of air pollution variables. Upper triangle entries indicate correlation in warm season (April-September), and lower triangle entries indicate correlation in cold season (October-March).

	PM _{2.5}	EC	OC	SO ₄	NO ₃	Na ⁺	Ni	V	Zn	Si	Se	Br	NO ₂	SO ₂	CO
PM _{2.5}	NA	0.60	0.76	0.95	0.50	0.17	0.36	0.62	0.57	0.35	0.71	0.71	0.63	0.57	0.52
EC	0.72	NA	0.68	0.50	0.60	0.14	0.45	0.55	0.68	0.28	0.45	0.53	0.73	0.53	0.72
OC	0.84	0.79	NA	0.64	0.38	0.06	0.27	0.57	0.52	0.28	0.58	0.59	0.58	0.52	0.49
SO ₄	0.86	0.50	0.62	NA	0.43	0.14	0.31	0.57	0.51	0.29	0.70	0.67	0.52	0.53	0.42
NO ₃	0.92	0.61	0.77	0.74	NA	0.31	0.53	0.61	0.57	0.13	0.43	0.53	0.64	0.43	0.60
Na ⁺	0.19	0.23	0.20	0.13	0.11	NA	0.22	0.30	0.08	0.13	0.09	0.25	0.10	0.03	0.16
Ni	0.47	0.49	0.47	0.25	0.50	0.18	NA	0.53	0.62	0.20	0.27	0.52	0.58	0.53	0.40
V	0.72	0.67	0.75	0.50	0.65	0.19	0.65	NA	0.60	0.20	0.55	0.65	0.60	0.55	0.55
Zn	0.49	0.55	0.55	0.32	0.47	0.14	0.57	0.67	NA	0.21	0.46	0.59	0.72	0.66	0.55
Si	0.59	0.54	0.63	0.51	0.59	0.15	0.44	0.46	0.44	NA	0.31	0.27	0.29	0.25	0.14
Se	0.65	0.50	0.69	0.55	0.65	0.08	0.42	0.57	0.45	0.65	NA	0.67	0.46	0.63	0.29
Br	0.79	0.66	0.79	0.62	0.73	0.29	0.45	0.68	0.55	0.63	0.72	NA	0.68	0.60	0.49
NO ₂	0.80	0.74	0.79	0.58	0.75	0.25	0.54	0.72	0.56	0.58	0.58	0.69	NA	0.67	0.67
SO ₂	0.66	0.60	0.71	0.44	0.71	0.11	0.72	0.74	0.62	0.56	0.69	0.68	0.68	NA	0.34
CO	0.77	0.78	0.75	0.57	0.60	0.25	0.41	0.66	0.50	0.47	0.41	0.62	0.73	0.50	NA

Table 2. Summary of the pattern of positive associations between air pollutants and CVD mortality and hospitalizations. The lag day at which the most significant association was observed (significant at alpha = 0.05 level, or nearly significant) and corresponding percent excess risk (%ER) and 95% confidence intervals are indicated.

Source Type	Pollutant	CVD Mortality				CVD Hospitalizations			
		lag	Warm %ER	lag	Cold %ER	lag	Warm %ER	lag	Cold %ER
Mass	PM _{2.5}	0	2.0(0.7,3.3)	1	1.0(-0.1,2.2)			0	1.1(0.2,2.0)
Vehicle	EC	1	2.3(0.3,4.3)	1	1.6(-0.1,3.2)	0	1.4(0.1,2.7)	0	1.5(0.2,2.8)
Vehicle	CO					0	1.7(0.7,2.6)	0	1.5(0.8,2.3)
Vehicle	NO ₃	1	2.7(0.2,5.3)					0	1.2(0.1,2.3)
Vehicle/Oil	NO ₂	1	1.3(0.0,2.7)	1	1.0(-0.2,2.2)	0	2.3(1.4,3.3)	0	2.2(1.3,3.1)
Oil	Ni			3	1.8(-0.1,3.7)			0	1.7(0.3,3.2)
Oil	Zn			3	1.4(0.1,2.6)			0	1.5(0.5,2.4)
Oil	V			3	1.4(-0.3,3.1)			0	1.0(-0.3,2.3)
Oil	SO ₂					0	1.7(-0.3,3.7)	0	1.2(0.4,2.0)
Coal	Se	1	3.6(1.5,5.6)					0	1.5(0.4,2.7)
Coal	SO ₄	1	2.1(0.7,3.5)					0	2.0(-0.1,4.0)
Vehicle/2ndary	OC	0	1.8(0.5,3.0)	1	1.5(-0.5,3.5)	0	1.1(0.1,2.1)	0	1.9(0.3,3.5)
Vehicle	Br	0	4.1(1.7,6.4)	1	1.3(-0.3,2.9)			0	1.5(0.2,2.7)
Soil	Si	1	1.2(0.4,2.1)	1	1.7(-0.3,3.8)			0	2.7(1.1,4.4)
Salt	Na ⁺	0	1.0(-0.3,2.5)	0	1.6(-0.1,3.4)	2	1.0(0.1,1.9)	3	1.1(-0.1,2.3)

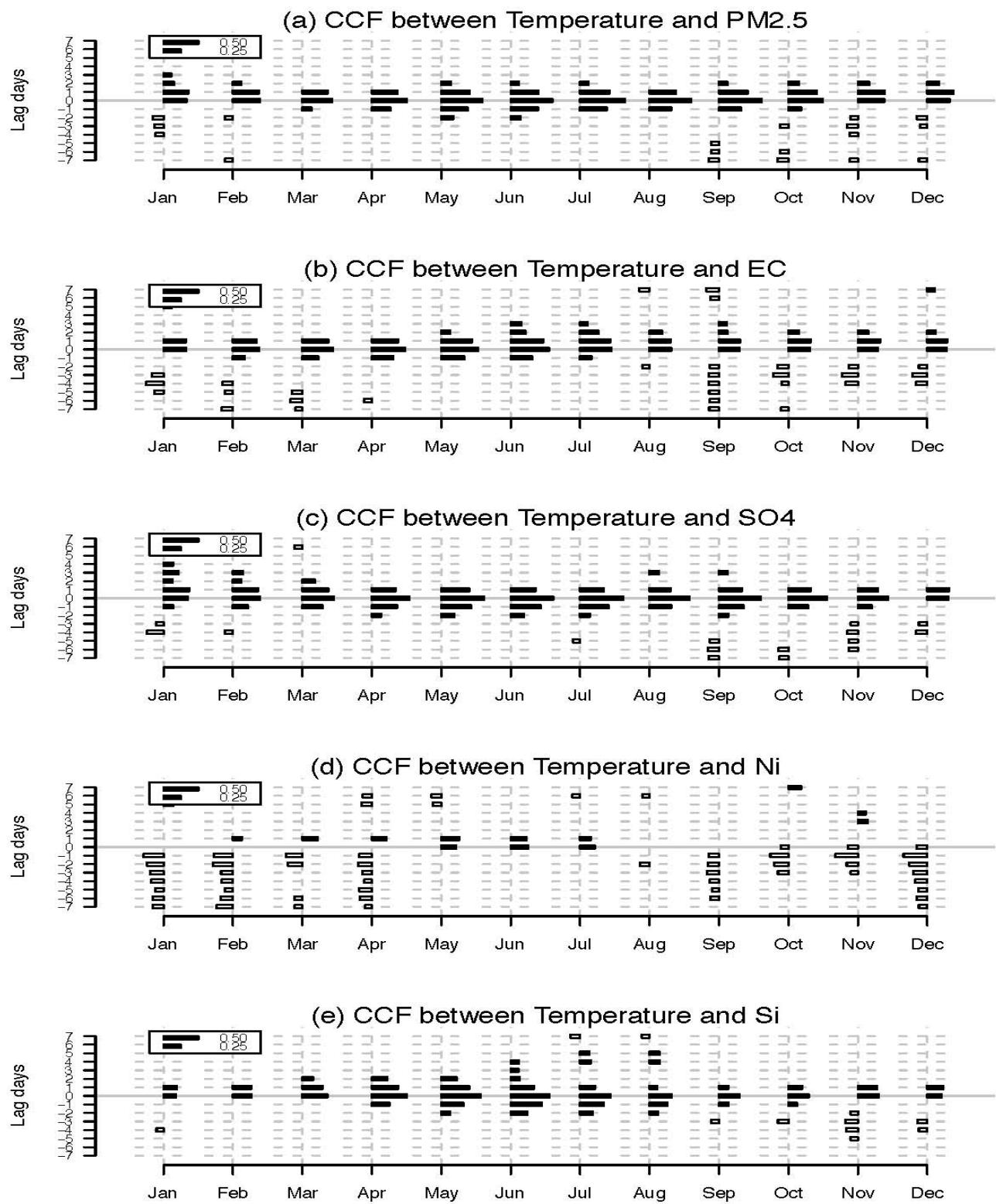


Figure 1. Cross-correlation function (CCF) between: (a) temperature and PM_{2.5}; (b) temperature and EC; (c) temperature and SO₄; (d) temperature and Ni; and, (e) temperature and Si. Black bars are positive correlations and white bars are negative correlations. For “CCF between X and Y”, a correlation below the centerline (lag 0) indicates that X leads Y, and a correlation above the centerline indicates that Y leads X. Correlations less than 0.1 are not shown. The lengths of reference correlations (0.25 and 0.50) are also shown. CCFs were computed after removing seasonal trends and day-of-week pattern.

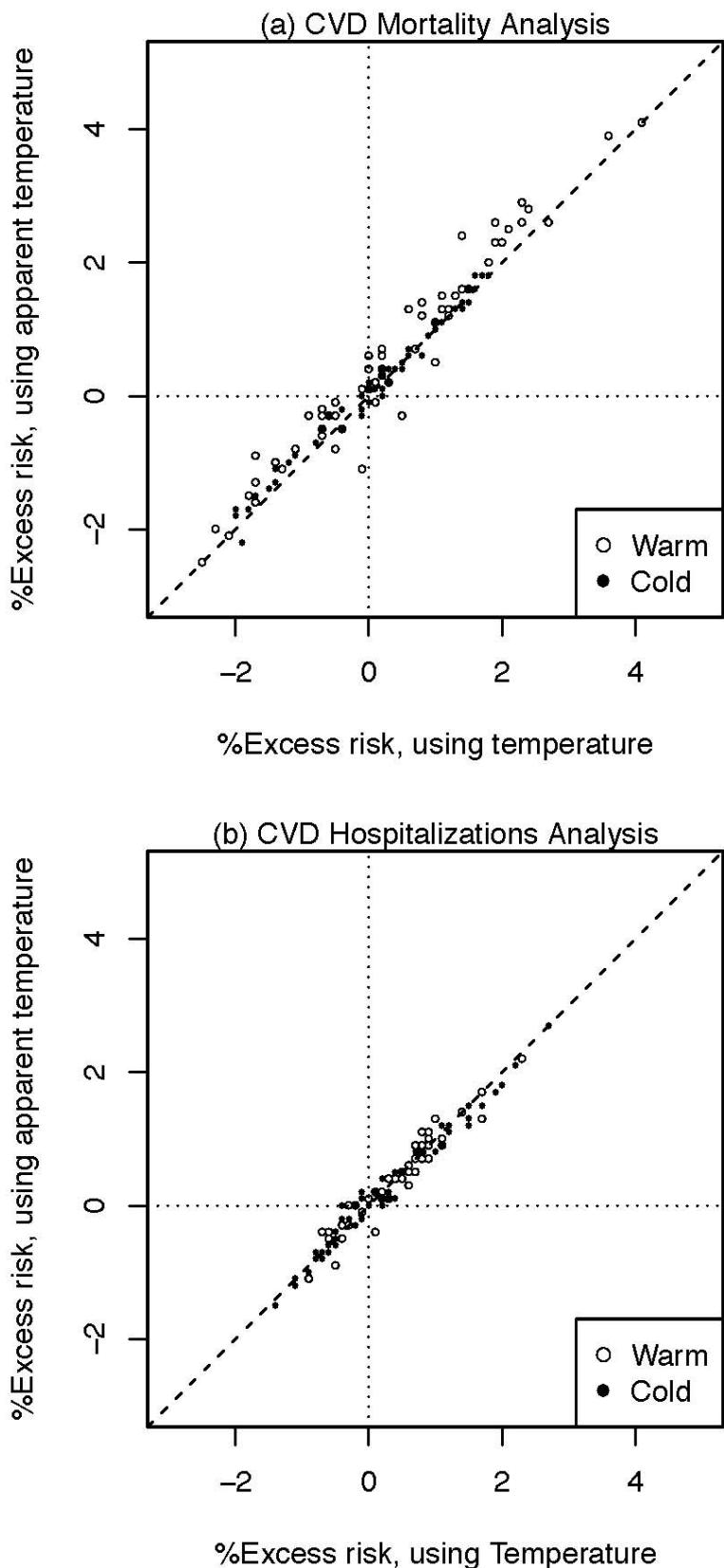


Figure 2. Comparisons of risk estimates for (a) CVD mortality and (b) CVD hospitalizations using temperature and apparent temperature for the warm and cold seasons. Each point represents a pair of risk estimates for an air pollutant at a given lag evaluated by the two models. White points are risk estimates in the warm season. Black points are risk estimates in the cold season.